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Indian Standard
SCHEDULE OF TERMINALS FOR LECLANCHE TYPE PRIMARY BATTERIES

(*First Revision*)

First Reprint MARCH 1981
(Incorporating Amendment No. 1)

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October 1976

AMENDMENT NO. 2 AUGUST 2008
TO
IS 2652 : 1976 SCHEDULE OF TERMINALS FOR LECLANCHÉ TYPE PRIMARY BATTERIES

(First Revision)

(*Page* 12, *clause* 5.1) — Substitute 'Nickel/Tin plated/coated brass or steel' *for* 'Brass' under *Preferred Material.*

(ET 10)

Reprography Unit, BIS, New Delhi, India

IS : 2652 - 1976

Indian Standard

SCHEDULE OF TERMINALS FOR LECLANCHÉ TYPE PRIMARY BATTERIES

(*First Revision*)

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Indian Standard

SCHEDULE OF TERMINALS FOR LECLANCHE TYPE PRIMARY BATTERIES

(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 27 April 1976, after the draft finalized by the Primary Cells and Batteries Sectional Committee had been approved by the Electrotechnical Division Council.

0.2 This standard was first published in 1964 mainly to bring together in the form of a schedule the various types of terminals specified for a variety of primary batteries in the relevant Indian Standards. Subsequently Amendments No. 1 to 3 were issued. This revision which incorporates these amendments, has been undertaken with a view to aligning it with the latest developments at the international level and to make it up-to-date.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers a schedule of terminals for Leclanché type primary batteries.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 1885 (Part XV)-1967† shall apply.

---

*Rules for rounding off numerical values (*revised*).

†Electrotechnical vocabulary Part XV: Primary cells and batteries.

3. DESIGNATION

3.1 Terminals shall be designated by letters followed by numbers. The letters shall show the type of terminals and the numeral suffix shall indicate the dimensions and shape.

3.1.1 The letter symbols used to denote the type shall be as follows:

CP = Cap
FC = Flat contact
SS = Spring strip
SP = Spring (other than strip)
SC = Screw
CL = Clip
WR = Wire
RBS = Radio battery socket
SN = Snap fastener

3.1.2 *Examples:*

SC-2 = Screws of designation M 3.5
RBS-4 = Radio battery socket of shape and size as in Fig. 3.

4. DIMENSIONS

4.1 Caps — Dimensions optional.

4.2 Flat Contacts — The dimensions shall be as follows:

FC-1 = No standard dimensions
FC-2 = Dimensions shall be as given in Fig. 1.

4.3 Spring Strips = The dimensions shall be as follows:

SS-1, SS-2 } Dimensions shall be as in Fig. 2A.
SS-3 - Dimensions shall be as in Fig. 2B.
SS-4, SS-5 } Dimensions shall be as in Fig. 2C.

4.4 Spring other than Strip — The dimensions shall be as follows:

SP = Dimensions shall be as in Fig. 2D.

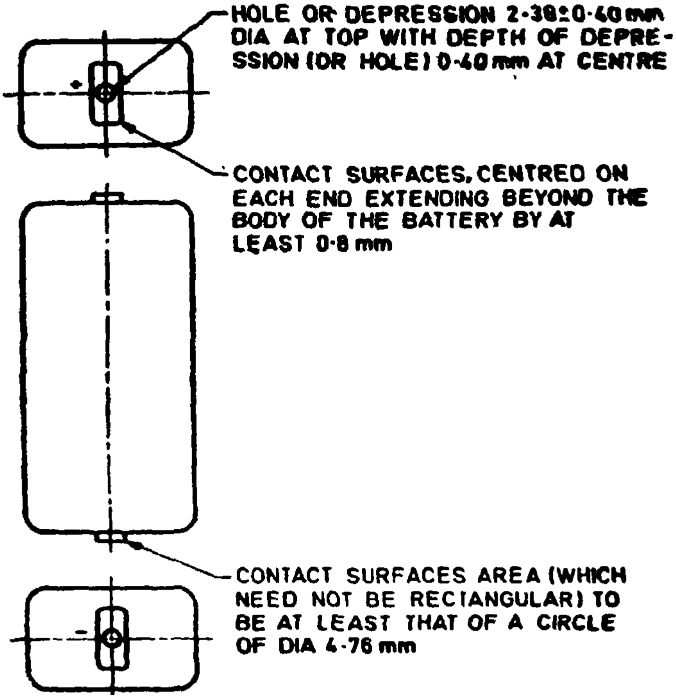

HOLE OR DEPRESSION 2·38±0·40 mm DIA AT TOP WITH DEPTH OF DEPRESSION (OR HOLE) 0·40 mm AT CENTRE
CONTACT SURFACES, CENTRED ON EACH END EXTENDING BEYOND THE BODY OF THE BATTERY BY AT LEAST 0·8 mm
CONTACT SURFACES AREA (WHICH NEED NOT BE RECTANGULAR) TO BE AT LEAST THAT OF A CIRCLE OF DIA 4·76 mm

FIG. 1 FLATE CONTACT

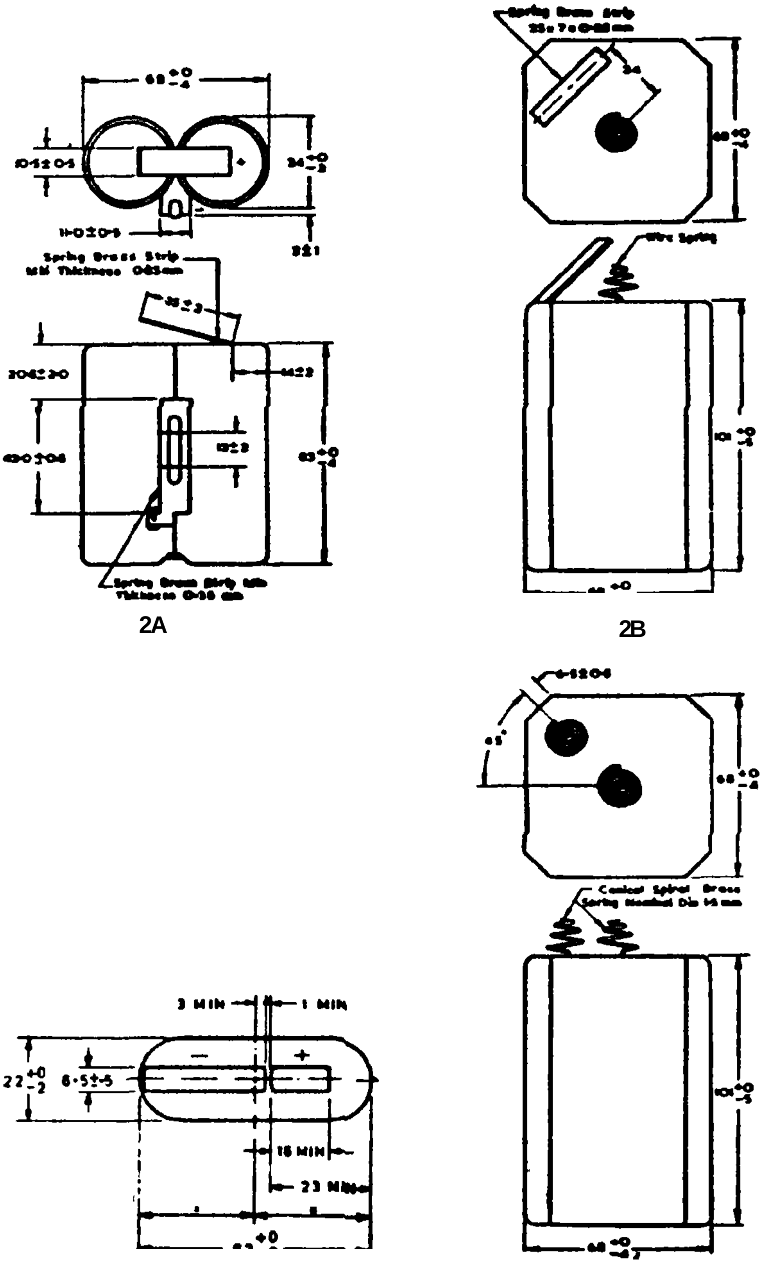
4.5 Screws — Dimensions of the screws shall be as given below:

Designation	**Thread Designation*	*Major Dia*	*Pitch*
		mm	mm
SC-1	M 5	5.000	0.8
SC-2	M 3.5	3.500	0.6

4.6 Clips — Dimensions optional.

---

*_See_ IS : 4218-1967 ISO metric screw threads.



2A

2B

2C

2D

All dimensions inmillimetres.

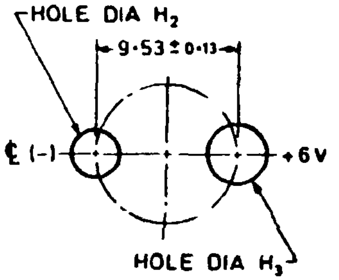
FIG. 2 TERMINALS SS-1 TO SS-5 AND SP

4.7 Wire Terminals — The wire terminals shall have the number of strands and dimensions as follows:

Designation	*Minimum No. of Strands*	*Nominal Dia of Strands* mm	*Minimum Cross-Sectional Area* mm^2	*Minimum Length* mm
WR-1	19	0.355	1.8	180
WR-2	32	0.20	1.0	120
WR-3	32	0.20	1.0	100
WR-4	32	0.20	1.0	60

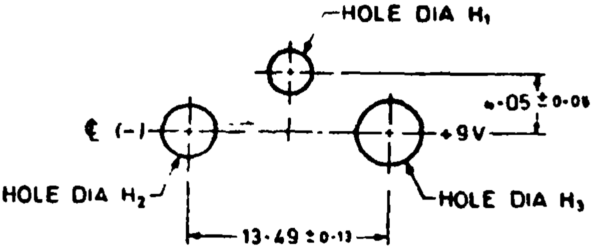
4.8 Radio Battery Socket — Nominal dimensions, spacing and arrangement of the sockets shall be as indicated below:

RBS-4	Fig. 3
RBS-16	Fig. 4



All dimensions in millimetres.

FIG. 3 TERMINAL RBS-4



All dimensions in millimetres.

FIG. 4 TERMINAL RBS-16

4.8.1 The standard pin diameters for the plugs matching the sockets, corresponding hole diameters in the top insulating plates of the sockets and size reference shown in Fig. 3 and 4 shall be as follows:

Size Reference	*Nominal Diameter of Plug Pins* to *Match the Socket Contacts*	*Nominal Diameter for Corresponding Hole in the Top Insulating Plate of the Socket*
	mm	mm
H_1	2.38 ± 0.05	2.85 ± 015
H_2	3.18 ± 0.05	3.70 ± 0.15
H_3	3.97 ± 0.05	4.50 ±0.15

4.9 Snap Terminals — The dimensions shall be as indicated below:

SN-3	Fig. 5, 8 and 9
SN-4	Fig. 6, 10 and 11
SN-5	Fig. 7, 8 and 9.

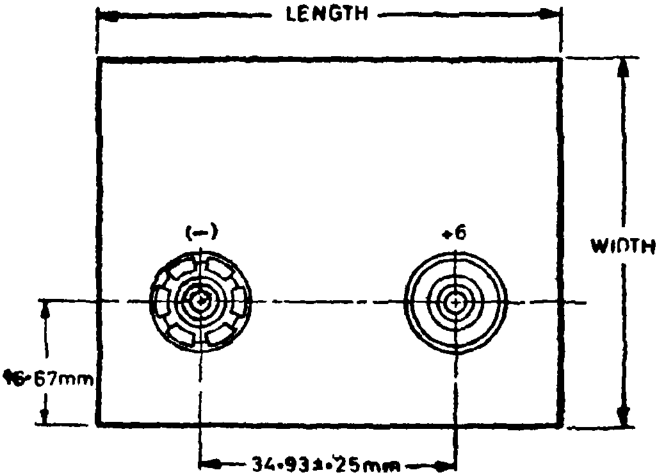


FIG. 5 TERMINAL SN-3

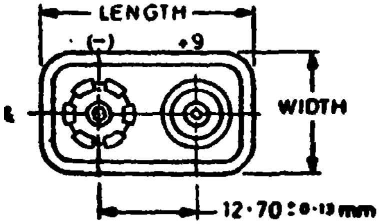


FIG. 6 TERMINAL SN-4

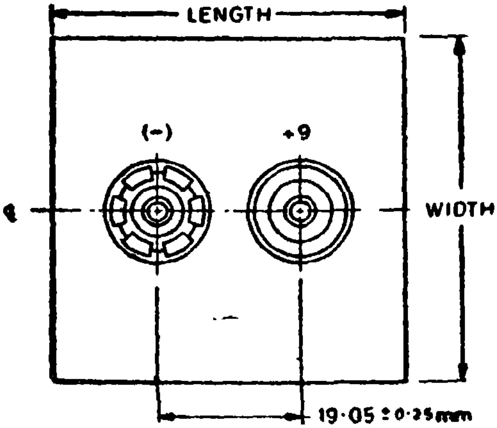
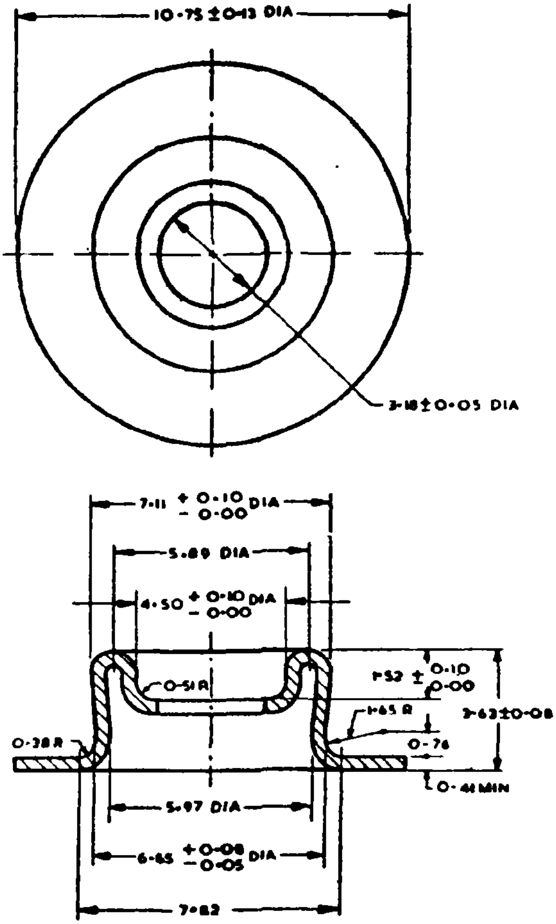
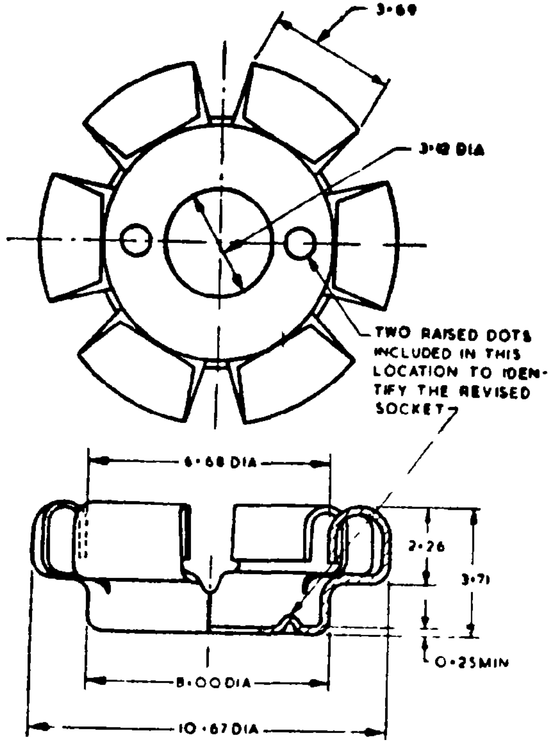


FIG. 7 TERMINAL SN-5



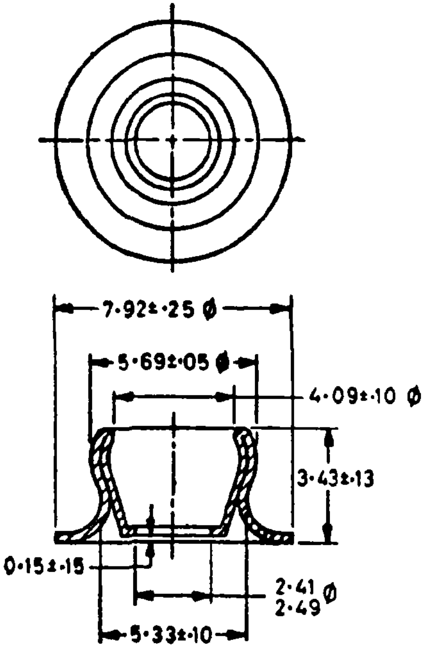
All dimensions in millimetres.

FIG. 8 POSITIVE TERMINAL FOR SN-1, SN-2, SN-3 AND SN-5


3·69
3·12 DIA
TWO RAISED DOTS INCLUDED IN THIS LOCATION TO IDENTIFY THE REVISED SOCKET
6·68 DIA
2·26
3·71
0·25 MIN
8·00 DIA
10·67 DIA

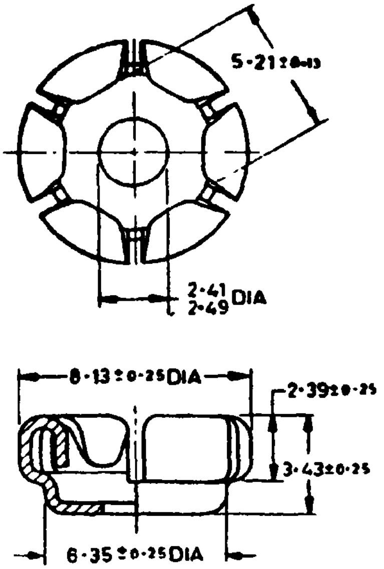
All dimensions in millimetres

FIG. 9 NEGATIVE TERMINAL FOR SN-3 AND SN-5



All dimension in millimetres.

FIG. 10 POSITIVE TERMINAL FOR SN-4



All dimensions in millimetres.

FIG. 11 NEGATIVE TERMINAL FOR SN-4

5. MATERIALS AND CONSTRUCTION

5.1 Preferred materials and details of construction of the terminals are given below. Other suitable materials which are functionally equivalent may also be used as alternatives:

Terminal Designation	*Preferred Material*	*Details of Construction*
CP	Brass	This shall be a metal cap terminal (for example, on the electrode of cylindrical cell batteries).
FC-1	Zinc or bright tinplate	This shall be the bottom of zinc container of cells or additional tinplate bottom fixed in place over the bottom of zinc can and in electrical contact with it.
FC-2	Brass	This shall be a flat metallic plate terminal.

Terminal Designation	*Preferred Material*	*Details of Construction*
SS-1 SS-2 SS-3 SS-4 SS-5	Brass	Each of these terminals shall be a resilient flat strip.
SP	Brass	This shall be a conical spiral wire spring.
SC-1 SC-2	Brass	These shall be screw terminals having threaded shank, collar and knurled nut or alternatively cap type terminals with threaded shank and knurled nut.
C-L	Brass	This shall be spring clip of the Fahnestock type.
WR-1	Tinned, annealed copper	This is a flexible insulated wire conductor made up of stranded, tinned annealed copper wires covered with strong cotton braid, thoroughly impregnated with suitable insulating compound. Alternatively, the wires may be insulated with rubber, PVC or other plastic material.
WR-2 WR-3 WR-4	Tinned, annealed copper	These are flexible insulated wire conductors made up of stranded, tinned annealed copper wires insulated with rubber, PVC or other plastic material.
RBS-4 RBS-16	Brass	Each of these terminals is a plug-in socket having an assembly of resilient tubular metal contacts mounted on an insulating plate having holes over these contacts to accept matching non-resilient pin plugs for electrical contact with external circuit. The socket contacts shall provide and maintain good electrical contact with matching plugs for external circuits determined as follows: A sizing plug having pins to engage with all die contacts of the socket to be tested

Terminal Designation	*Preferred Material*	*Details of Construction*
		with each of the pins having a diameter equal to the maximum diameter specified for the pins of the plug with a tolerance of — 0.0003 mm is inserted into and withdrawn from the socket 5 times.
		After this, a measuring plug also having pins to engage with all the contacts of the socket to be checked with the pin having a diameter equal to the minimum diameter specified for the pins of the plug with tolerance of + 0.000 3 mm is inserted into the above socket. A direct current of 1 A, derived from source not exceeding 2.5 V, shall be passed through the plug and socket when the contact resistance, measured between plug and socket, shall not exceed 10 milliohms for each of the socket contacts.
		Sizing plug pins shall be made of polished stainless steel.
		Measuring plug pins shall be made of hardened steel or beryllium copper, rhodium plated to a thickness of 0.025 mm or equivalent.
		Sizing plug and measuring plug shall have their pins situated within 0.012 mm of the nominal geometric positions of the socket contacts.
SN-3 SN-4 SN-5	Tinned brass	These are pressed in snap fasteners comprising a resilient stud (+ ve) and a socket (-ve), mounted on an insulating plate.

5.2 Workmanship and Finish — Workmanship and finish shall conform to the best prevalent trade practice and shall ensure effective service and durability. The contacts shall be clean and bright and free from stains as well as from greasy or other fatty matter.

6. APPLICATION

6.1 The application of different types of terminals to various primary cells/batteries in the relevant Indian Standards is shown below:

Terminal Designation	*Designation of Cell or Battery Where Used*	*Relevant Indian Standard*
CP	R6, 2R10, R12, R14, R20, R22, R25	IS : 203-1972*
FC-1	R6, 2R10, R14, R20	do
FC-2	10F20 (+ve) and (-ve)	IS : 7253-1974†
	15F20 ,, ,,	
	20F20 ,, ,,	
SS-1	2R22 (+ve)	IS : 203-1972*
SS-2	2R22 (-ve)	do
SS-3	4R25 (+ve)	do
SS-4	3R12 (+ve)	do
SS-5	3R12 (-ve)	do
SP	4R25 (+ve) and(-ve)	do
SC-1	R40	IS : 586-1976‡
	NS1 and NS2	IS : 267-1976§
	SAC 1, SAC 2	IS : 268-1976‖
SC-2	NS3	IS : 267-1976§
CL	R40	IS : 586-1976‡
WR-1	SAC 1, SAC 2	IS : 268-1976‖
WR-2	NS1	IS : 267-1976§
WR-3	NS2	IS : 267-1976§
WR-4	NS3	IS : 267-1976§
RBS-4	4F100-2	IS : 2576-1976¶
RBS-16	6F100, 6F100-2, 6F-100-3, 6F100-6	IS : 2576-1976¶
SN-3	4F100, 4F100-4	IS : 2576-1976¶
SN-4	6F22	IS : 2576-1976¶
SN-5	6F90	IS : 2576-1976¶
SC-2	R40	IS : 586-1976‡

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*Specification for dry batteries for flashlights (*third revision*).

†Specification for dry batteries for photoflash equipment.

‡Specification for Leclanché type dry batteries for telecommunications signalling and general purposes (*third revision*).

§Specification for inert cells (*third revision*).

‖Specificationi for Leclanché type sack cells (*second revision*).

¶Specifications for dry batteries for transistor radio receivers (*first revision*).

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	a
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous Intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/g^2
Energy	Joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	elemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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